



EFFECT OF SUPPLIER ASSESSMENT ON SUPPLY CHAIN PERFORMANCE AMONG MANUFACTURING FIRMS IN NAIROBI COUNTY, KENYA

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ABSTRACT

The study was guided by the following objectives; the supplier assessment criterion, the supplier assessment methods, supplier assessment practices and supplier assessment approach. The scope of study was limited to manufacturing firms in Nairobi County, Kenya. The research used descriptive research design. Data was analyzed using both descriptive and inferential statistics where regression analysis used to establish the effect of independent variables on the dependent variable. The population was 405 respondents drawn from manufacturing firms Nairobi county with a sample size population of 213. The data was analyzed with SPSS version 23. Non-probability sampling technique was used. Questionnaires were used to collect both primary and secondary data. Data collected was validated, edited, coded and then analyzed qualitatively. Descriptive statistics such as percentages and frequencies were used to summarize the data. A good response rate of 63% was realized. It was established that most of the supplier assessment indicators have positive impact on performance of the firm. The study further adopted a regression analysis to determine the relationship between the variables at 5% confidence level of significance. The study findings showed that the four variables had a significant influence on supply chain performance of the firms. The study recommended that a similar research should be conducted with an aim at investigating the effects of supplier assessment on performance with other variables or of other firms in other sectors, including the service industry in the Kenyan market. The study indicated that there has been limited amount of research on effects of supplier assessment on supply chain performance of manufacturing firms in Kenya. Thus, the findings of this study served as a basis for future studies on supplier assessment.

Key words; *Supplier Assessment Criterion, Supplier Assessment Methods, Supplier Assessment Practices, Supplier Assessment Approach, Supply Chain Performance.*

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INTRODUCTION

Organization's ability to provide dependable quality and efficient products and services depends on its access to quality supply of inputs (CIPS, 2013). Market factors are always dynamic, as such, organizations also need to be in constant changes. This is particularly true in competitive and globalized markets. Organizations are progressive and under compression to find methods to reduce inputs cost and manufacturing costs through engaging in strategic supplier assessment techniques and evaluation (Chivaka, 2005). According to Nadir (2012) supplier evaluation is perceived as a tool which provides the buying firm with a better understanding of "which suppliers are performing well and which suppliers are not performing well" but studies reveal that even after having carried out an in-depth supplier evaluation plus assessment coupled with the enactment of Public Procurement and Disposals Act (PPDA) of 2005 and other policies on supplier evaluation, inefficiencies still exist ranging from supplies being made halfway or even termination of contracts before conclusion.

Any organizational success often hinges on the most appropriate selection of its partners and suppliers. Procurement is an increasingly important activity within most manufacturing firms, and severe financial and operational consequences can result from the failure to optimize the procurement function. Specifically, appropriate suppliers selection is one of the fundamental strategies for enhancing the quality of output of any organization, which has a direct influence on the company's competitiveness and reputation (Manyega, 2015). One of the techniques used by organization to select best suppliers is supplier assessment. Supplier assessment is the quantitative and qualitative evaluation of suppliers to ensure a portfolio of best in class suppliers is available for use (Grandia, 2015). To sustain effective and reliable sources of supplies, buyers should select their suppliers carefully and assess them regularly (Manyenze, 2013).

In many countries, the manufacturing sector is the major source of market for suppliers sometimes demanding up to 40 percent of national demand. For instance, in the UK, the public sector demand per year stands at £150 billion. For this reason, the government of UK has formulated public contracts regulations 2015 aimed at enhancing transparency and efficiency in public procurement operations in the country Cabras, (2011). Owing to the importance of public procurement, conference on public procurement has been constituted to look at issues of integrity and transparency in public procurement (Tozay, 2012).

The concept of supplier assessment has gained popularity among practitioners and even scholars (Vorster, 2010). In Nigeria, the study conducted by manal et al. (2014) on supply chain practices identified supplier assessment as a critical supply chain activity that every organization must engage in. In Kenya, the PPDA Act 2005 and procedure 2006 serves as a guide that provides guidelines and procurement procedure and supplier evaluation and assessment for public procurement entities to ensure judicious, economic and efficient use of state resources ensuring that public procurement is carried out in affair, transparent and non-discriminatory manner.

Rioba (2015) associated procurement performance with effectiveness and efficiency procurement operations. On the other hand, Muma et al. (2014) and Osuga et al. (2015) pointed out that procurement operational performance is associated with reduced procurement costs and improved achievement of procurement organizational goals respectively. The concept of procurement performance has emerged strongly in the recent past in Kenyan Public sector (Karimi, 2014).

In Kenya, the Public Procurement and Disposal Act 2015 outlined the process through which the firms operates and spends public money (Onyinkwa, 2015). It is estimated that in Kenya public procurement accounts for over 10% of the Gross Domestic Product (GDP), making it a large market for suppliers and contractors (Singer, 2017). This therefore means that every effort should be made

to erect safeguards to check against corrupt malpractices in public procurement (PPOA, 2009). It is for this reason that there is a need to assess both the potential and current suppliers on one on one basis to improve their performance and capabilities for the benefit of buying organization (CIPS Knowledge, 2014).

After the prequalification of suppliers through supplier evaluation, improvement in procurement performance is expected, however it puzzling to note that buyer supplier relationship does not last any longer, suppliers are in most cases conventionally selected on the basis of low price and less importance is given to the suppliers who give assurance of on time delivery and long term relationships (Reza, 2013). The question that will arise in this case is, as to what criterion to manufacturing firms use in selecting and evaluating its suppliers for better procurement performance.

Statement of the Problem

The selection of a supplier should follow an elaborate assessment of the effective suppliers since they have magnificent impact in the organization. Delayed deliveries, poor quality goods and services, untimely completion of works is collective scenario experienced by manufacturing firms due poor suppliers assessment techniques.

PPOA report revealed that 30% of supply chain ineptitudes in the manufacturing and public sector at large in Kenya are triggered by the deficiencies caused by the supplier's. As such most firms have come up with strategies of reducing the issues caused by the suppliers through supplier assessment and evaluation. In ideal scenarios, supplier assessment is anticipated to have positive impact on supply chain performance. Nonetheless, PPOA reports showed that vendors are in most cases conventionally selected on the basis of lowest price quoted and while quality, time and other important aspects is not taken with great importance. Supplier assessment is arguably one of the most significant method of ensuring qualified suppliers are given the tenders. It is for this reason

that this study will focus on the impact of supply chain performance on manufacturing firms.

The study done by Grandia (2015) recommended that manufacturing firms should borrow a leaf from those that have successful proactive procurement functions in place. However, the study did not show the benefits firms stand to gain by adopting proactive supplier practices. Onyinkwa (2010) illustrated that planning of supplier's assessment is an ingredient to service delivery, but the study focused on service delivery ignoring other measures of procurement like financial gains from cost reduction. On the other hand Singer (2017) asserts that strategic procurement management has a direct impact on the procurement performance of the firms. Tozay (2012) concluded that procurement planning and strategies have a direct positive impact on the performance of organization in delivery of goods and services. The study did not bring out the strategic procurement practices to use to realize these benefits. According to Rioba (2015), the factors affecting supplier assessment, include technical capability, associated costs, organizational profile, quality assessment, risk factors, service levels and the profile of the suppliers. The research also established that in most organizations in Kenya include opacity in the process of selecting suppliers and that it does not involve technocrats from other departments that may be affected by the requisitioned goods or services. Palmer (2013) in a research on the supplier performance indicators suggested that clear structures should be instituted to ensure defective delivery.

However, despite there being numerous studies done, none of the studies was done to investigate the supplier evaluation criterion and the impact to the procurement performance in Kenya. Therefore, this study was undertaken to fill the knowledge gap by assessing the impact of supplier assessment on supply chain performance of manufacturing firms in Kenya.

Objectives of the study

The general objective analyzed the effect of supplier assessment on supply chain performance among manufacturing firms in Kenya. The specific objectives were;

- To analyze the effect of supplier assessment criterion on supply chain performance among manufacturing firms in Kenya
- To establish the effect of supplier assessment methods on supply chain performance among manufacturing firms in Kenya
- To determine the effect of supplier assessment practices on supply chain performance among manufacturing firms in Kenya
- To find out the effect of supplier assessment approach on supply chain performance among manufacturing firms in Kenya

LITERATURE REVIEW

Theoretical Review

The lean Supplier Competence Model

The Lean Supplier Competence Model was developed by Marks (2007). Through the model, a gap analysis can be charted and an action plan drawn to bridge the disparity in the organization. The model evaluates the supplier against the five categories supports the Lean techniques of Kaizen – continuous improvement. The Supplier Competency Model explains how organizations interact in the five areas of competency where there is varying degrees of performance ultimately to achieve lean organizational operations. Each category is broken down into specific "behaviors" or ways the company and the supplier interact with each other. These behaviors are rated from a "1" as "Less Lean" to a rating of a "5" as "More Lean." This measurement allows a company to determine placement of business based on common values and common strategic goals. Using this model, as the business philosophies of the company and the supply base draw together to eliminate waste, the natural result is a reduction of cost to the supply chain and to the ultimate customer (Singer, 2017).

Shareholders Theory

The motivation of stakeholders in a business management setting reflects current interest in managing the issue of sustainability in inter-organizational relationships, where the firm is generally considered an unsatisfactory unit of analysis and it is necessary to take a whole system, sector based or industry view (Manal et al., 2014). It will provide a theoretical lens through which researchers can identify and examine influences that promote survival and legitimacy of organizational practices. Relationships according to stakeholder thinking do not occur in a vacuum of dyadic ties, but as a network of influences involving multiple stakeholders (Rowley, 1997). This idea fits with the interest in boundary spanning and stakeholder networks that extends beyond the boundary of the firm or individual who can affect, or is affected by, the achievement of a company.

Freeman (1984) attributes the source of an increasingly turbulent business environment to a change in the relationship between internal stakeholders (i.e. owners, customers, employees and suppliers), and external stakeholders (i.e. governments, consumer advocates, environmentalists, special interest groups and the media). The diversity of Shareholders theory and its facility for identifying and prioritizing conflicting requirements has rejuvenated interest in the literature particularly in the context of the possibilities of collaborative implementation of sustainable supply chain scenarios (Kovacs, 2008). This theory supported Supplier assessment methods considerations the benefits of shareholders and the organization at large.

Strategic Theory

Strategic choice theory considers the interaction between organizational actions and events (Reza, 2013). The integrative approach of strategic choice theory is of importance and beneficial for strategic management of suppliers in the organization, for instance, by stressing cross-functional cooperation

and interrelation of vendors in the firm in organizations (Palmer, 2013). Theories enhance research and practice as they help make sense of complex and dynamic environments in the organization (Loeser et al, 2012).

Strategic choice theory depicts the relationship between the suppliers of the firm and firm performance and the overall interaction between environment and organizations. In the context of this study, some of the variables i.e. supplier assessment criterion, and adoption of effective strategic supplier assessment practices and it focused on involving the top management critical decision to make these strategic decisions to invest on these practices to improve the performance of their organizations and achieve a competitive advantage.

Grey system theory

According to Grey System Theory, in a practical business environment, in most instances, supplier assessment takes place in an environment with less than perfect information. As such, there is some level of uncertainty in the decisions related to supplier assessment. In such an environment, it is important to develop certain indicators or criterion; qualitative or quantitative that the supplier can be subjected to before selection. From this theory, the grey correlation analysis model with seven progressive steps was developed (Rioba, 2015). These steps include; grey generation aimed at gathering information on grey aspects, grey modeling done to establish a set of grey variation equations and grey differential equations, grey prediction aimed at achieving a qualitative prediction, grey decision, grey relational analysis and grey control (Karimi, 2014).

Conceptual Framework

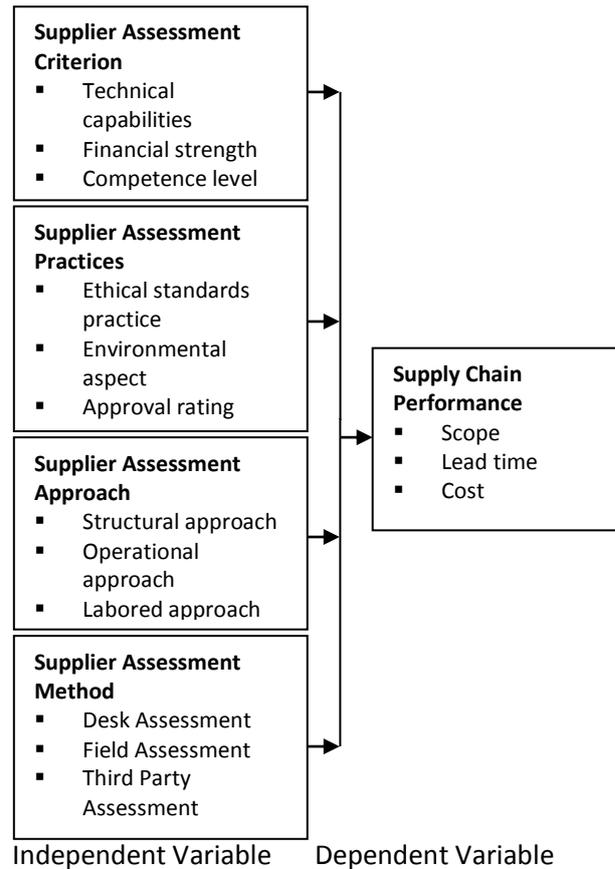


Figure 1: Conceptual Framework

Source: Author (2018)

Empirical Review

Supplier Assessment criterion

According to Palmer (2013) in their survey on supplier assessment in Germany, a competitive supplier sourcing process should be carried out in an open, objective and transparent manner can achieve best value for money in public procurement. Essential principles that should be observed in conducting the procurement function include supplier financial capacity, capability and readiness to embrace new technology among other factors. In addition to the above indicators, the findings of study conducted by Christian (2011) revealed that cost factors, technical capability, quality assessment, organizational profile, service levels and risk factors, in that order of relative importance, are key factors affecting supplier assessment in procurement management.

According Vorster (2010) in her study on the determinants of supplier assessment and evaluation in Pakistan Telecom industry, supplier financial capacity expertise is one of the key factors which determine the eventual performance of both the supplier and procurement performance, the study depicted high correlation between the financial capacity of supplier and ability of supplier to deliver which in turn enhances procurement performance indicating a need for a strategic alliances for improved performance of the parties.

Supplier assessment methods

A study by Manyega (2015) on the determinants of public procurement performance in manufacturing firms established that the main concern of procurement function is to make sure that one buys from the best suppliers and also improve the current suppliers. The organizations therefore choose suppliers with who have the capacity to deliver. The study further observed that supplier incentives and awards can work as a tool to influence future behavior of both buyer and supplier organization. By connecting procurement targets to certain supplier competence, organizations achieve higher supplier performance thereby leading to improved procurement performance.

On the other hand Cardenas et al (2017) in his study on factors affecting procurement performance of manufacturing firms in Nairobi County found out that selection of suppliers is done based on certain set criterion and the needs of the procuring entity. He points out that among the factors which affects the procurement performance includes timely preparation of procurement plan, strategic supplier assessment plus buyer supplier relationships among other factors.

Supplier Assessment Practices

In attempts to reach this objective, procurement undertakes diverse measures ranging from supplier assessment, supplier evaluation, setting of selection and evaluation criterion, staff training, among other

measures with the intention of improving procurement performance. Environmental challenges, such as global warming, have demanded greater concern by organizations regarding their environmental management (Lin *et al.*, 2001). However, in order to improve their relations with the environment, these organizations must contribute towards a reduction in environmental impacts from their supply chains, stimulating improvements in their suppliers' environmental performance.

A research by Kagendo (2010) on the Effects of Public Procurement and Disposal Act on Procurement in Parastatals in Kenya" found that while PPOA reforms have helped professionalize and streamline public procurement and disposal in Kenya, challenges still remain, including corruption and incompetence by procurement officers, ignorance of guidelines provided by the PPOA, inefficiencies in procurement processes, no incentives for the organizations and the pressure of implementing PPOA and PPDA guidelines on procurement. The process of supplier assessment in Kenya as outlined by the PPOA and PPDA guidelines requires that public organizations first determine their needs, and then place an advert in media (tender advertisement) that can reach a significant proportion of the Kenyan population (Kebo *et al.*, 2013).

Supplier Assessment Approach

Grandia (2015) conducted a literature review on drivers and barriers for environmental supply chain management. They broadly distinguish internal (organizational) and external (regulatory, customer, competition, society, and suppliers) drivers, as well as internal (cost, training, lack of legitimacy) and external (regulation, poor supplier commitment, industry specific) barriers. Their qualitative study among seven large private and public organizations revealed that the organizations face very diverse internal and external barriers. The drivers, on the contrary, seemed to be more homogeneous, with

regulatory compliance being mentioned by all seven organizations.

This is in line with Grandia (2015) whose position that companies should strive for environmentally or socially desirable activities if and only if there is a direct impact on the economic viability of the company? Taking up this idea of strategic management, a potential explanation for increased sustainable sourcing activities at least among some of the FSI companies could be their attempt to achieve first mover competitive advantage (McWilliams, 2013). Supplier assessment decisions must include strategic and operational factors as well as tangible and intangible factors in the analysis (Nielsen, 2013). That's why decision maker can analyze the supplier assessment decision in a systematic and scientific approach by means of utilizing the proposed model.

METHODOLOGY

The study adopted a descriptive research design. The target population was stratified through top management level, middle level managers, low level management and non-management. The study population for the study was 455 employees of manufacturing firms in Nairobi. The study used the Yamane (1967) formula to arrive at the sample size of 213 respondents. Stratified random sampling was used in selection of the respondents. The questionnaire was the selected instrument or tool for data collection for the study. Quantitative data collected was analyzed by the use of descriptive statistics using SPSS (Version, 23) and presented through percentages, means, standard deviations and frequencies. Correlation analysis was conducted to establish the strength of the relationship between the independent and the dependent variable. Multiple regressions was done to analyses impact of supplier assessment on supply chain performance of manufacturing firms in Kenya. The study computed ANOVA and β coefficients. The regression equation was:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

Where:

Y= Supplier assessment

B= Constant

B1, B2, B3 and B4= Coefficients

X1= Supplier Assessment Criterion

X2=Supplier assessment methods

X3= Supplier Assessment practices

X4= Supplier Assessment Approach

ϵ = error term.

RESULTS

Descriptive Analysis, presentation and discussion.

Supplier Assessment Criterion

From the research findings, majority of the respondents indicated that they neither agreed nor disagreed that the firms implemented supplier assessment criteria based on the average mean of 2.792. Majority of the respondents neither agree nor disagree that the firms focus on financial stability of the supplier's process as shown by a mean of 2.85; the respondents also had moderate stand that the firm technical capabilities of the suppliers guaranteed as shown by a mean of 2.55; respondents also were in moderate agreement on firm is keen in establishing the competence of the supplier in the organization as shown by a mean of 2.55. Majority of the respondents were in moderate agreement that financial strength affect the quality of products as shown by mean of 2.02. Concisely, majority of the respondents agreed Competence level affects performance as shown by a mean of 3.99. This implies that majority of the firms had started recognizing the role of supplier appraisal on enhancing performance with other firms in the manufacturing sector. The findings of this study are in tandem with literature review by singer, (2017) who observed that supplier assessment criteria that are enhance issues such as using effective purchasing strategies, waste reduction, and budget review and planning of the materials.

Table 1: Descriptive analysis of supplier assessment criterion

Statements	Mean	Std. Deviation
Do the firms focus on financial stability of the suppliers	2.85	1.54
Is The technical capabilities of the suppliers guaranteed	2.55	1.43
Do The firm is keen in establishing the competence of the supplier in the organization	2.55	1.32
Financial strength affect the quality of products	2.02	1.23
Competence level affects performance	3.99	1.39
Average	2.792	1.382

Supplier Assessment practices

From the research findings, majority of the respondents indicated that they neither agreed nor disagreed that the firms have effective supplier practices based on the average mean of 3.31. Majority of the respondents agreed that the firms have implemented environmental aspect when selecting the suppliers as shown by a mean of 3.12; the respondents also had moderate agreement stand that the ethical standard of the supplier crucial before the award of the tender to supplier in the organization as shown by a mean of 2.94; respondents also were in agreement that organization provides the approval rating for key suppliers in the organization as shown by a mean of

3.53. Majority of the respondents agreed that ethical measurement affects performance shown by mean of 3.81 and the respondents agreed that approval rating increase quality of products and services shown by mean of 4.17.

This implies that majority of the firms had started recognizing the role of supplier assessment practices on performance with other firms in the manufacturing sector. The findings of this study are in tandem with literature review by Tozay, (2012) who observed that supplier appraisal practices that are enhance issues such as using effective purchasing strategies, and proper ethical standards that enhances supply chain performance.

Table 2: Descriptive analysis of supplier assessment practices

Statements	Mean	Std. Deviation
Environmental aspect is considered when selecting the suppliers	3.12	1.32
The ethical standard of the supplier crucial before the award of the tender	2.94	1.3
Do the organization provides the approval rating for key suppliers in the organization?	3.53	1.45
Do ethical measurement affects performance	3.81	1.4
Do approval rating increase quality of products and services	4.17	1.12
Average	3.314	1.318

Supplier Assessment Approach

From the research findings in majority of the respondents neither nor disagreed agreed that the firm has formally introduced operational approach

crucial for supplier selection process that enhances performance, as shown by average mean 3.77. Respondents agreed that organization focus on the key structural consideration in the suppliers before selection as shown by average 3.70. The respondents agreed that Labor force of the supplier fundamental before tender allocation as shown a mean of 3.58. The respondents agreed that Cultural approach affects performance of the organization as shown by mean of 3.18. The respondents agreed

that Effective Labored approach enhances quality as shown by a mean of 3.64. This implies that majority of the firms have started recognizing the role of supplier assessment approach in enhancing supply chain performance with other firms in the manufacturing sector. The findings of the study agree with literature review by Waithaka (2012), who indicated that supplier assessment, selection and approach improve productivity and performances of a firm.

Table 3: Descriptive analysis of supplier Assessment Approach

Statements	Mean	Std. Deviation
Operational approach crucial in supplier selection process	3.77	0.181
The organization focus on the key structural consideration in the suppliers before selection	3.70	0.139
Is labor force of the supplier fundamental before tender allocation	3.58	0.189
Cultural approach affects performance of the organization	3.18	0.175
Effective Labored approach enhances quality	3.64	0.162
Average	3.57	0.138

Supplier assessment method

The research requested the respondents to indicate the extent to which they agree the firms has implemented the supplier assessment method in an effort to enhance their supply chain performances in the manufacturing sector. From the results, majority indicated that they neither agree nor disagree that the firm had provide incentives to the potential suppliers as shown by a mean of 3.30. The respondents agreed that prequalified suppliers given awards for job well done as shown by a mean of 3.62. The respondents agreed that frequent Audits done to the suppliers of the organization as

shown by a mean of 4.07. The respondents agreed that mutual partnership affects performance as shown by a mean of 3.50. The respondents agreed that the Incentives to suppliers affects performance as shown by 3.53. The above findings corroborate with literature review by Sandeep (2007) who indicated that supplier assessment method is achievable through; vendor incentives, random assessment of the supplier's ability and keen handling and verification of the products. According to Eyaa & Oluka (2011), the long-term relationship with suppliers is another important aspect of enhancing performance of firms.

Table 4: Descriptive analysis of supplier assessment method

Statements	Mean	Std. Deviation
Do the organization provide incentives to the potential suppliers	3.30	1.28
Are prequalified suppliers given awards for job well done	3.62	1.27
Frequent Audits done to the suppliers of the organization	4.07	0.95
Mutual partnership affects performance	3.50	1.54
Incentives to suppliers affects performance	3.53	1.45
Average	3.622	1.26

Table 5: Correlation Matrix

		Supplier Assessment Criteria	Supplier Assessment Practices	Supplier Assessment Approach	Supplier assessment method
Supplier Assessment Criteria	Pearson correlation	1			
Supplier Assessment Criteria	Sig Pearson correlation	.538** 0.000	1		
Supplier Assessment Criteria	Sig Pearson correlation	.535** 0.003	.613** 0.000		
Supplier Assessment Criteria	Sig Pearson correlation	.154** 0.014	.373** 0.000	.477** 0.001	
Supply Performance	Sig Pearson correlation	.493** 0.000	.575** 0.000	.679** 0.000	.576** 0.000

The study used Pearson correlation analysis to establish the association among the variables used in the study. A Pearson correlation was used since the data was discrete. Correlation indicates the direction in one variable if other variables changes. A negative Pearson correlation value indicates negative correlations while a positive Pearson correlation value indicates a positive correlation. The strength of the association increases as the value approaches either negative or positive. Correlation findings presented indicated that the correlation between supplier assessment criteria and supply chain performance at manufacturing firms was 0.493 with a corresponding p value of 0.000. The correlation coefficient was therefore significant and positive implying that if supplier assessment criteria increase the supply chain performance at manufacturing firm also increases. The findings concur with Karimi Namusonge (2014) findings who also revealed that technical capability, financial strength and competitive level affected performance in the manufacturing sector. The results further revealed that the correlation between Supplier assessment practices and supply

chain performance at 0.575 with a corresponding p value of 0.000. The correlation coefficient was also significant and positive which implied that if increase in supplier assessment practices increases the supply chain performance of manufacturing firm. This finding conforms to those of palmer (2013) who found out that there is a strong relationship between approval rating of suppliers and supply chain performance of a firm.

The findings also indicate that the correlation between supplier assessment approach and supply chain performance at manufacturing firm was 0.679 with a corresponding p value of 0.000. The correlation coefficient revealed a significant and positive association implying that if supplier assessment approach increases the supply chain performance also increases singer (2017) also emphasizes that the scope of supplier assessment approach is determine whether the operational approach, structural approach and labored approach.

The finding results indicate that the correlation between supplier assessment method and supply chain performance on manufacturing firms was

0.576 with a corresponding p value of 0.000. The correlation coefficient revealed a significant and positive association implying that increase in supplier assessment increases the supply

performance. According to Preuss (2011) incentives and awards and audits are very crucial in enhancing the performance of vendors in the organization.

Table 6: Multivariate Regression Analysis

Model	R	R ²	Adjusted R ²	Std. error of the estimate
1	0.640 ^a	0.41	0.401	0.54908

In order to establish the statistical significance of the hypothesized relationships, multiple linear regression was conducted at 95 percent confidence ($\alpha=0.05$). The findings revealed a relationship $R=0.640$, indicating a strong positive association

between supplier appraisal criteria, supplier appraisal practice, supplier appraisal approach, supplier assessment method and performance. $R^2=0.41$ indicate that 41.7% of variation in the performance can be explained by the four variables.

Table 7: Analyze of various (ANOVA) results (overall model significance).

Model		Sum of squares	Df	Mean square	F	Sig
1.	Regression	52.583	4	13.146	43.602	.000 ^b
	Residual	75.674	129	0.301		
	Total	128.257	133			

a. dependent variable: performance

b. Predictors: (constant), Supplier appraisal criteria, supplier appraisal practices, Supplier appraisal approach, supplier assessment method.

The result of ANOVA test show that the F value is 43.602 with a significance of p value =0.000 which was less than 0.05, meaning that there is a significant relationship between supplier appraisal criteria, supplier appraisal practices, supplier appraisal approach, supplier assessment method and performance of a firm. The ANOVA statistics at 5% level of significance showed that the value of F

calculates(F computed) is 43.602 and the value of F critical (F tabulated) at 4 degrees of freedom and 83 degrees of freedom at 5% level of significance is 2.44. F calculated (F computed) is greater than the critical (F tabulated) ($43.602 > 2.44$), this showed that the overall model was statistically significant at 5% significance level.

Table 8: Regression coefficient Results

	B	Std error	T	Sig.
(constant)	2.331	0.173	13.473	0.000
Supplier Appraisal Criteria	0.196	0.042	4.666	0.000
Supplier Appraisal Practices	0.260	0.065	4.000	0.000
Supplier Appraisal Approach	0.217	0.052	4.173	0.000
Supplier assessment method	0.198	0.061	3.245	0.000

a) Dependent Variable: performance function

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \epsilon$$

$$Y = 2.331 + 0.196X_1 + 0.260X_2 + 0.217X_3 + 0.198X_4 + \epsilon$$

Y= performance

B₀= Constant

X₁= Supplier Appraisal Criteria

X₂= Supplier Appraisal Practices

X₃= Supplier Appraisal Approach

X₄= Supplier assessment method

ϵ = Error term

The coefficient of supplier appraisal criteria was ($\beta=0.196$, $p=0.000$, <0.05) showed a statistically significant relationship between supplier appraisal

criteria and performance. The results implied that a unit increase in supplier appraisal criteria would result to an increase of 0.196 units in performance. Similarly, Vorster (2013) study concluded that technical capability affected performance of an organization. It was therefore recommended that the implementation of supplier appraisal indicators have impact on the performance of a firm.

The coefficient of supplier appraisal practices was ($\beta=0.260$, $p=0.000$, <0.05) shows a statistically significant relationship between supplier appraisal practices and performance. The results implied that unit increase in supplier appraisal practices would result to an increase of 0.260 units in performance.

The coefficient value of Supplier Appraisal Approach was ($\beta=0.217$, $p=0.000$, <0.05) this shows statistically significant relationship between Supplier Appraisal Approach and performance function of a firm. The results is tandem with the research done by Schmalensee (2013) who found out that just in time is effective in utilization of operational activities in the organization increases the performance of the firms.

The coefficient of supplier assessment method was ($\beta=0.198$, $p=0.000$, <0.05) shows a statistically significant relationship between supplier assessment method and performance. The results implied that a unit increase in supplier assessment method would result to an increase of 0.198 units in performance of the firm Tozay (2012) also emphasized that the scope of supplier assessment method is to determine whether the organization's awards and audit process as represented by management, is adequate and functioning in a manner which ensures that the suppliers are appropriately identified and managed.

CONCLUSIONS

The study found that supplier appraisal criteria had impact on the performance of the firm. The extent of technical capabilities of the supplier, Competence level and financial strength are basis for effective and efficient selection of the qualified

supplier to perform task and duties of the firms. Therefore, enhancing suitability and competitiveness of the firm.

The study found that effectiveness of in supplier appraisal practices contributes to ability to approve the available suppliers based on their ability to perform the duties assigned. Ethical standard practices, environmental aspects and approval ratings also contributes to performance improvement of the firm's performance.

From the study, supplier appraisal approach affects the performance of the firm. The structural approach is effective in the performance of the firm. Operational approach is cognizant in enhancing the suitability of the supplier through the critical assessment of the ability to perform. The labored approach is moreover very critical in establishing the ability of the supplier to finish duties on time as speculated by the firm.

The study found that supplier assessment method elements have an impact in motivation of the suppliers which may result to poor quantity, late deliveries, and increase in cost and also lack of supplier delivery appraisals which lead to impact on the performance of the firm. Many respondents agreed that incentives, awards and audits improves the performance of the firm.

RECOMMENDATIONS

Manufacturing firms should embrace expertise in assessing the technical capabilities of the supplier before the selection. The firms should also focus in ascertaining the financial strength and competence level for the suppliers. This will improve the performance of the firms as it will be able to meet the requirements of users and also reduce disputes among suppliers.

Manufacturing firms should adopt supplier appraisal practices. These should be done by having an effective ethical standard practices guidelines, improving the environmental aspect strategies in the organization, and implementing effective and

efficient approval ratings of the suppliers in the organization. This will aid in improving performance as much capital will not be tied up in correcting the defects caused by the suppliers due to lack of effective practices.

The operations of the organization should be effectively and efficiently controlled through supplier appraisal approach. These activities enhance the performance of the firms as they ensure the right quality is received, extra costs are not incurred and production is not delayed.

Manufacturing firms should practice long-term relationship with suppliers and develop strategies

to develop them so that they can be able to deliver the quality required without errors and defects. These activities improve the performance of the firm as they assist in improving the performance of the suppliers and consequently the entire firm.

Areas for Further Research

The objective of the study was to assess the effects of supplier appraisal on performance of manufacturing firms in Kenya. It recommended that a similar research should be conducted with an aim at investigating the effects of supplier appraisal on performance with other variables or of other firms in other sectors, including the service industry in the Kenyan market.

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